

CLAIMS

What is claimed is:

1. A method of providing telecommunication services to a mobile-subscriber terminal roaming in a wireless telecommunication network, the method comprising:

5 the mobile subscriber terminal roaming into a private-wireless network from a public-wireless network to which it subscribes;

 retrieving roaming-agreement information from a roaming-agreement database;

 determining roaming rules, from the roaming agreement information, for operating the mobile subscriber terminal in the private-wireless network; and

10 the private wireless network providing to the mobile-subscriber terminal services in accordance with the roaming rules.

2. The method of claim 1, wherein the roaming-agreement database is managed by a private-wireless network device, and further comprising the private-wireless network device periodically updating roaming-agreement information in the roaming-agreement database.

3. The method of claim 1, wherein the roaming-agreement database is managed by a public-wireless network device of the public-wireless network, and further comprising the private-wireless network device populating a local database in the private-wireless network with the roaming-agreement information.

- 20 4. The method of claim 3, wherein the public-wireless network device periodically populates the local database with the roaming-agreement information.

5. The method of claim 3, wherein the public-wireless network device populates the local database with the roaming-agreement information in response to the mobile-subscriber terminal roaming into the private-wireless network.
6. The method of claim 5, wherein the step of the mobile-subscriber terminal roaming into the private-wireless network comprises the mobile-subscriber terminal registering in the private-wireless network.
7. The method of claim 1, wherein the mobile-subscriber terminal is identified by a first identifier when operating in the public-wireless network, and wherein the application uses the first identifier when querying the roaming-agreement database for the roaming-agreement information associated with the mobile subscriber terminal.
8. The method of claim 1, wherein the mobile-subscriber terminal is identified by a first identifier when operating in the private-wireless network, and wherein the application uses the first identifier when querying the roaming-agreement database for roaming-agreement information associated with the mobile subscriber terminal.
9. The method of claim 8, wherein the mobile-subscriber terminal is further identified by a second identifier when operating in the public-wireless network, and wherein the application uses the first or second identifier when querying the roaming-agreement database for roaming-agreement information associated with the mobile subscriber terminal.
10. The method of claim 1, wherein roaming-agreement information includes a routing protocol, and further comprising the application using the routing protocol to select one

of a plurality of communication paths to use for serving communications to the mobile-subscriber terminal.

11. The method of claim 10, wherein the routing protocol comprises routing logic for serving communications to the mobile-subscriber terminal in the private-wireless network whenever the mobile-subscriber terminal is in the private-coverage area.

12. The method of claim 11, wherein the routing protocol further comprises routing logic for routing communications through the public-wireless network whenever the mobile-subscriber terminal is in the private-coverage area.

13. The method of claim 12, wherein the public-wireless network comprises a home network of the mobile-subscriber terminal.

14. The method of claim 12, wherein the public-wireless network comprises a network in which the mobile-subscriber terminal was last served.

15. The method of claim 11, wherein the private-wireless network interfaces to a transport network, and wherein the routing protocol further comprises routing logic for routing communications through the transport network whenever the mobile-subscriber terminal is in the private-coverage area.

16. The method of claim 15, wherein the transport network comprises the Internet.

17. The method of claim 15, wherein the transport network comprises the Internet, wherein the communications comprise data communications, and wherein the routing logic is operable to route the data communications through the Internet.

18. The method of claim 15, wherein the transport network comprises the Internet, wherein the communications comprise voice communications, and wherein routing logic is

operable to route the voice communications through the Internet using a voice-over-packet protocol.

19. The method of claim 11, wherein the routing protocol further comprises routing logic for routing communications through the transport network and not the public-wireless network whenever the mobile-subscriber terminal is in the private-coverage area.

20. The method of claim 11, wherein the public-wireless network serves communications in a first-coverage area, wherein the first-coverage area and private-coverage area are not mutually exclusive, and wherein the routing protocol comprises routing logic for serving communications to the mobile-subscriber terminal in the private-wireless network whenever the mobile-subscriber terminal is in the private-coverage area.

21. The method of claim 10, wherein the routing protocol further comprises routing logic for routing communications through the public-wireless network whenever the mobile-subscriber terminal is in the private-coverage area.

22. The method of claim 1, wherein the roaming-agreement information comprises a registration protocol, and further comprising the mobile-subscriber terminal registering in the private-wireless network according to the registration protocol, wherein the mobile-subscriber terminal registers before being served communications.

23. The method of claim 22, wherein the registration protocol comprises a protocol selected from the group consisting of an authorization protocol, an authentication protocol, an accounting protocol, and a combination of any of the authorization, authentication accounting protocols.

24. The method of claim 22, wherein the registration protocol comprises a notification protocol, and further comprising notifying the public-wireless network when the mobile-subscriber terminal registers in the private-wireless network.

25. The method of claim 24, further comprising the public-wireless network relaying communications for the mobile-subscriber terminal to the private-wireless network.

26. The method of claim 24, further comprising:

the private-wireless network sending to the public-wireless network a registration-notification message containing a network identifier, and

the public-wireless network using the network identifier to locate the mobile-subscriber terminal for relayed communications.

27. The method of claim 1, wherein the roaming-agreement information comprises a call-state protocol, and further comprising the private-wireless-network device collecting call-state information for the mobile-subscriber terminal according to the call-state protocol while the mobile-subscriber terminal operates in the private-wireless network.

28. The method of claim 27, further comprising the private-wireless-network device sending to the public-wireless network the call-state information, wherein the public-wireless network is operable to use the call-state information for billing purposes.

29. The method of claim 27, wherein the call-state information comprises at least call duration information.

30. The method of claim 1, wherein roaming-agreement information comprises a location-based-service protocol, and further comprising the application using the location-based-service protocol to determine a location-based service provider for the mobile-subscriber

terminal when the mobile subscriber terminal is operating in the private-wireless network.

31. The method of claim 30, wherein the location-based-service protocol specifies that the private-wireless network is the location-based service provider.

5 32. The method of claim 30, wherein the location-based-service protocol specifies that the public-wireless network is the location-based service provider.

33. The method of claim 30, wherein the location-based-service protocol specifies that a third-party-location-based-service provider is the location-based-service provider.

34. The method of claim 1, wherein roaming-agreement information comprises a cost
10 protocol, and further comprising the application using the cost protocol to determine whether to provide service to the roaming mobile-subscriber terminal.

35. The method of claim 34, wherein the cost protocol comprises an agreed-upon cost for a given service.

36. The method of claim 34, wherein the cost protocol comprises a negotiable rate for a given
15 service.